Claims

[c1] 1. A welding apparatus for a welding process in a straight polarity configuration comprising:

a welding gun having means for feeding an electrode into the welding gun; the electrode comprising a sheath encapsulating a core having a core composition, the core composition comprising a combination of graphite and one or more compounds of potassium, the combination of graphite and compounds of potassium in the core composition not exceeding approximately 5% by weight; and a power source supplying electrical current to the electrode.

- [c2] 2. The welding apparatus of Claim 1, further comprising a gas source supplying a shielding gas to the welding apparatus.
- [c3] 3.The welding apparatus of Claim I, wherein the welding process is gas metal arc welding.
- [c4] 4.The welding apparatus of Claim 1, wherein the means for feeding the electrode into the welding gun comprise a wire drive and a wire reel.
- [c5] 5.The welding apparatus of Claim 1, wherein one or more compounds of potassium comprise K 2 MnTiO 4 and K 2 SO 4.
- [c6] 6.The welding apparatus of Claim 5, wherein the combination is selected from the range from about 0.3% to about 5.0%.
- [c7] 7. The welding apparatus of Claim 2, wherein the shielding gas comprises a mixture of Ar and CO 2.

8.A wire comprising a sheath encapsulating a core having a core composition, the core composition comprising a combination of graphite and one or more compounds of potassium, the combination of graphite and compounds of potassium in the core composition not exceeding approximately 5% by weight.

[¢8]



- [c9] 9. The wire of Claim 8, wherein the compounds of potassium comprise K $_2$ MnTiO 4 and K 2 SO 4.
- c10] 10. The wire of Claim 8, wherein the combination of graphite and one or more compounds of potassium in the core composition is selected from the range of about 0.3% to about 5% by weight.
- [c11] 11. The wire of Claim 10, wherein the compounds of potassium comprise K 2 MnTiO 4 and K 2 SO 4.
- 12.A process of manufacturing a metal-cored wire comprising: [c12] shaping a metal sheath into a fillable shape; filling the sheath/with a core composition to form a core, the core composition comprising a combination of graphite and one or more compounds of potassium, the combination not exceeding approximately 5% by weight, and encapsulating the core by the sheath to form a metal-cored wire.
- [c13] 13. The process of Claim 12, wherein the compounds of potassium comprise K 2 MnTiO 4 and K 2 SO 4.
- [c14] 14. The process of Claim 12, wherein the core composition is a powder.
- [c15] 15. The process of Claim 12, wherein the combination is selected from a range of about 0.3% to about 5.0% by weight.
- [c16] 16. The process of Claim 15, wherein the compounds of potassium comprise K 2 MnTiO 4 and K 2 SO 4.
- c17] 17. A welding process in a straight polarity configuration comprising: providing a welding apparatus having means for feeding an electrode into the welding apparatus and means for supplying a shielding gas into the welding apparatus; coupling the welding apparatus to a power source in the straight polarity configuration and forming an arc;

feeding the electrode into the welding apparatus, the electrode comprising a sheath and a core having a core composition, the core composition comprising a combination of graphite and

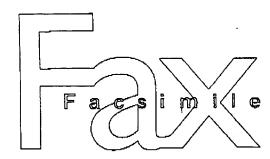
one or more compounds of potassium, the combination of graphite and compounds of potassium in the core composition not exceeding approximately 5% by weight; and supplying the shielding gas into the welding apparatus to shield the electrode and the arc.

- [c18] 18.The welding process of Claim 17, wherein supplying the shielding gas into the welding apparatus comprises providing an external gas source.
- [c19] 19.The welding process of Claim 17, wherein feeding the electrode into the welding apparatus comprises providing means for feeding the electrode that is external to the welding apparatus.
- [c20] 20. The welding process of Claim 17, wherein supplying the shielding gas comprises providing a mixture of Ar and CO₂.
- [c21] 21.The welding process of Claim 17, wherein the welding process is a gas metal arc welding process.
- [c22] 22. The welding process of Claim 17, wherein one or more compounds of potassium comprise K₂MnTiO₄ and K₂SO₄.
- [c23] 23. The welding process of Claim 22, wherein the combination is selected from the range from about 0.3% to about 5.0%.





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MESSAGE Serial Number 09/683,584,

Filed: January 22, 2002, Inventor: Anthony Nikodym

Attached are 3 subtitute sheets with the claims as originally filed. A numeral 1 was inserted before the first claim to specify the claim number.

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